



THE MODULE HANDBOOK

FACULTY OF BIOLOGY

Cell and Molecular Biology

Module code	BIO 10001
Module level	3 rd year of Undergraduate Program in Biology
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Courses included in the module, if applicable	-
Semester/term	Odd
Module coordinator(s)	Dr. Endang Semiarti, M.S., M.Sc.
Lecture(s)	1. Dr. Endang Semiarti, M.S., M,Sc. 2. Dr. Kumala Dewi, M.Sc.St. 3. Dr. Rarastoeti Pratiwi, M.Sc.
Language	Indonesia
Classification within the Curriculum	Compulsory
Teaching format/class hours per week during the semester	This course is organised into 2 parallel classes and planned to have 14 teaching weeks and 2 weeks of examination.
Workload	Estimated working hour: 9 hours/week.
Credit points	3-0 credits
Requirements	Biochemistry (BIO 40101)
Learning goals/competencies	1. Knowledge and understanding <ol style="list-style-type: none">The basic concepts, principles and theories relating to the structure of cells, engineering functions, diversity, reproduction, and evolution of biological systems at the cellular and molecular levels.Facts, concepts, principles and theories of cells that apply to branches of the biological sciences.Basic theory of cells and instrumentation to carry out scientific research that uses the basic biology of cells and molecules.Biological phenomena at the molecular and cellular level, and be able to explain how the theory of evolution meet with branches of biology.The role of biologists in common society and the scientific world.



THE MODULE HANDBOOK

FACULTY OF BIOLOGY

2. Ability/intellectual skill

- a. To analyze and solve a problem, also develop a plan of activities in the field of biology with a basic cell and molecular biology.
- b. Formulate and prove a hypothesis.

3. Practical skill

- a. Analyzing the results of biological experiments and determines the validity and accuracy of the cell and molecular biology.
- b. Using the scientific literature and make notes effectively.
- c. Using a computational program, especially in the field of bioinformatics and molecular biology of the cell.

4. Managerial and transferable skill

- a. Perform effective communication (written, oral, and with pictures) in the field of biology that use basic cell and molecular biology.
- b. Working in groups in solving the problem based on cell and molecular biology.
- c. Implement and integrate cell biology and molecular sciences in other disciplines of both biology and across the field.
- d. Using biological information and communication technologies, especially in the field of cell and molecular biology.
- e. Learning independently both in the new environment and that has been known previously, with an open and critical spirit.
- f. Learn effectively to the development of the profession and wider scope in career.

5. Attitude

- a. Being able to anticipate problems and find a way of solving problems related to biology on society, especially in the fields of cell and molecular biology.
- b. Have a curiosity (curiosity) more about the biology of cells and molecules.
- c. Respect for the originality of ideas, concepts and discoveries in the field of biology as a whole.
- d. Sensitive to face biological problems in the global scope/regional/local, as well as trying to solve them, either individually or in groups.
- e. Pay attention and be able to appreciate the views and opinions of the team members.

Content

This course describes the evolution of the cell, the basic concept of the cell, the cell either prokaryotes or eukaryotes, the organizational hierarchy of cells, a model



THE MODULE HANDBOOK

FACULTY OF BIOLOGY

	<p>of plasma membranes; structure and function, cytoplasm: the structure and function of cytosol; cytoskeleton and organelles contained therein, the nucleus: structure and function of the nuclear envelope; genetic materials; gene expression and regulation; chromosome; nucleoli; nucleoplasm / nucleosol, as well as the cell cycle, paraplasma: cell walls and extra-cellular matrix. Coupled with the introduction of several techniques used to study the examples of the latest research developments in the field of cell and molecular biology. This subject is closely related to other disciplines in the field of biology (among others genetics, enzymology, tissue culture) and across the fields (agriculture, agricultural technology, pharmacy, medicine).</p>
Study/ exam achievements	<ol style="list-style-type: none">1. Midterm: 30 %2. Final examination: 35 %3. Quiz: 5 %4. Individual task (presentation, discussion): 30 %
Forms of media	White board, LCD, notebook, video and animation.
Literature	<ol style="list-style-type: none">1. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K., Watson, J.D. (2008). Molecular Biology of The Cell. 5th ed. Garland Publ. Inc., New York.2. Gilman M., Watson J.D., Witkowski J., Zoller M. 2007. Recombinant DNA: Genes and Genomes. Published by W.H. Freeman & Company, USA, 492p.3. Alvarez, M.A. (2011). Genetic Transformation. Intechweb.org.4. Alberts, B., Bray, D., Johnson, A., Lewis, J., Raff, M., Roberts, K., and Walter, P. (1998). Essential Cell Biology. An Introduction to the Molecular Biology of the Cell. Garland Publ. Inc., New York.